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U. S. DEPARTMENT OF AGRICULTURE,

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**EFFECTS OF TICK ERADICATION ON THE CATTLE
INDUSTRY OF THE SOUTH.**

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INTRODUCTION.

Since 1906 the Bureau of Animal Industry of the United States Department of Agriculture has employed veterinarians and assistants in various Southern States in the work of exterminating southern cattle ticks. This parasite not only sucks blood from the cattle upon which they live, but also transmits to the cattle the microparasite which causes the dreaded disease Texas fever or southern tick fever. This disease kills more cattle in the South than all other diseases combined. The work of maintaining a Federal quarantine line and preventing ticks from infecting new areas north of this line and at the same time eradicating the ticks from an area of 198,802 square miles in seven years time was no small task, but on November 1, 1913, this had been done, and more than one-fourth of the infected area had been cleaned up. The work is being continued, and farmers are taking it up more readily than was formerly done, so that greater progress should be made in eradicating the pest than has been accomplished heretofore. The increased values of cattle due to their scarcity, and the realization that far better cattle can be raised when they are not ticky, now act as stimulants to the tick-eradication work.

The cattle of the southern portion of the United States vary greatly in size and quality, according to the location of the farms and the care which has been exercised in handling the herd. The native southern cattle are small in size, variable in color, usually poor in milking qualities, slow of growth, and poor in quality from the

NOTE.—This paper details the recent improvements in the cattle and pastures in the tick-free areas of the Southern States and suggests methods of improvement which should be adopted as soon as ticks have been eradicated from any section. Intended for distribution in the tick-infested region.

standpoint of beef production. This may be due to a number of causes, very prominent among which stands the cattle tick. These animals could not grow normally while young nor develop when older while they were infested with ticks, which not only decreased the vitality of the animals by the drain upon the blood supply, but weakened and stunted them by transmitting the protozoa of Texas fever. Then, too, these cattle could not be improved rapidly by crossing with good beef animals, because these beef cattle were usually brought in from the North and would generally die of fever before they proved of much service. This happened so often that the shipping of good cattle into the South was discouraged and almost given up for several years. The scrub was said to be the only animal which could withstand the former conditions in the South, but in reality the animals which were submitted to these conditions for a period of years often deteriorated until a scrub resulted. Scrub cattle were, therefore, accepted, not because they were wanted, nor because there was no desire for better stock, but because the cattle tick, frequently combined with poor treatment, immature breeding under range conditions, and often inbreeding for generations, gave scrubs as a result. This held true for so many years that the idea became fixed that only the scrub would live in the South despite any precautions that might be taken or conditions which might be changed.

However, the use of purebred beef bulls upon these herds of scrub cows, especially when the herd has been kept free of ticks, has resulted in such an improvement in the calves, both as to size and quality, that the old notion that good cattle could not be raised in the South is rapidly being dispelled.

IMPROVEMENT OF THE CATTLE.

The more progressive farmers in sections where the cattle tick has been eradicated have purchased good bulls to use in grading up their herds. The result has been wonderful. High-grade cows, producing deep, broad, blocky calves that mature into 800 to 900 pound steers at 2 years old have now replaced the small, cheap scrubs that were formerly on the farm. Scrub calves that were formerly worth from \$4 to \$7 at 12 months of age are supplanted by the grade beef calves that weigh 450 to 600 pounds at a year old and sell for \$15 to \$30 a head. Such grade calves have been marketed for the last three years by the Bureau of Animal Industry in the Alabama cattle-feeding experiments at prices ranging from \$25 to \$36 a head when fattened before being put upon the market.¹ Good profits were made on raising and feeding them.

¹ Bureau of Animal Industry Bulletin 147.

In counties which have been released from quarantine because of the eradication of the cattle tick the live-stock industry has immediately begun to improve, for better breeding bulls have been shipped into these counties and the cattle have advanced in price. This improvement has taken place on the farms of men who are primarily interested in the cattle business and not on the small farms where but few cattle are kept. It is well known that the small farmers outnumber the cattlemen many times over, hence the small farmer is not getting the full benefit to be derived from the work of cleaning up a county. There are a number of reasons why this is true, chief among which is the fact that he has not cows enough to justify him in buying a good bull, and very few of them have the money which they could spare for this purpose. Then, too, because of the fact that he has but two or three cows he is often indifferent to what they are bred. There is the mistake. If he has but two cows, all the more



FIG. 1.—Export steers on pasture in Virginia. (Courtesy of Virginia Department of Agriculture.)

important is it that he breed them to the best bull he can, instead of turning them out to mate with any scrub they find, because the man who produces a few calves is invariably in a better position to raise good ones than the large breeder of stock, as better care and more attention can be given to them. Again, the small farmer often needs the money which good calves would bring far more than does the farmer who is well fixed and owns quite a herd of stock. It will cost but little more to keep a good cow, whether for milk or beef purposes, than to keep a scrub, and the net income will be many times greater on the former, so why not produce a high-priced calf too? In these times of high-priced live stock it is just as important for the farmer to breed his cow to a good bull as it is to send his mare to a good stallion. The difference in price between the progeny from the scrub and from the good sire is relatively as great with the cow as with the mare; yet how many of our small farmers have made

a practice of taking a cow to a good bull instead of breeding her to some little angular scrub, just because he was near at hand, although he was worthless for any purpose?

If these small farmers are to get their just benefits and profits from the work they have helped to accomplish in the county, they must begin the practice of sending their cows to a good bull to be bred. This is done by the small farmers of the corn belt, and accounts largely for the high prices of cattle in those States. The farmer there who raises from 3 to 10 cattle a year often has better animals than the regular cattlemen.

The first objection raised against this method by the farmer of the South, however, may be that there are no good bulls in his neighborhood. If this is the case, why can not several of these farmers buy a bull to be kept at some centrally located farm for breeding? Or if some farmer knew that his neighbors would patronize a bull in the same manner that they do a stallion or a jack, how long would it be before some one shipped in a good bull? This could be accomplished by the farmers organizing bull clubs, either for the purchase of a bull or pledging themselves to breed their cows to a good bull at a reasonable fee, provided some one in the community would buy one. A certain time could be fixed for this breeding, say, just after sundown or at noon, in order to find the owner of the bull at home. This method was followed by one farmer in southern Indiana, who kept an exceptionally good bull for his own use. In some years as many as 40 outside cows, belonging to 30 or 32 people, were bred to this bull at a fee of \$1 for a bull calf and \$1.50 for a heifer. In this way the owner secured a nice sum to help pay for the keep of the bull, and at the same time cattle all over the community were improved. The effect of this one bull upon the cattle of that neighborhood could be seen for several years. Some of the cows brought to that bull were led from a distance of 1 to 1½ miles, and where care was taken to bring the cow quietly it was seldom necessary to return her for another service.

IMPROVEMENT OF THE PASTURE.¹

The farmers can raise more and better cattle by devoting a little time and attention to improving their pastures. Bermuda and carpet grass are the two standard pasture grasses which should be used as a foundation for making pastures. The Bermuda will do well on all soils, but especially on the stiffer soils, while the carpet grass will do exceedingly well on the sandy soils. If these grasses are not already present, the Bermuda should be planted during the wet weather of the spring, when other work can not be done. Bermuda sod or

¹ For a full discussion of this subject, see Farmers' Bulletin 509 of the U. S. Department of Agriculture.

cuttings should be used for planting. The carpet grass seed can not be purchased on the market, but if the carpet grass is not grazed after July it may be cut in September and the cut grass containing the seed scattered over the pasture lands. The grass may also be propagated by transplanting the sod. Once it gets started in a pasture it soon spreads over the entire pasture if grazed by cattle. Grazing and trampling seem essential to its best growth. The seeds of various kinds of clovers or grasses should be sown upon the pasture lands in order to extend the grazing season. In the Southeast, if 4 or 5 pounds per acre of bur clover seed (in the bur) is scattered about the pasture in August and an equal amount of lespedeza and white clover in March, these clovers will help the pasture wonderfully and



FIG. 2.—Steers on pasture in Virginia. (Courtesy of Virginia Experiment Station.)

will spread so that in a few years they will be found all over the ground. The bur clover gives good grazing in February and March, the white clover from April 1 to July 1, and the lespedeza from July 1 until frost in the fall. All of these grow well on Bermuda sod and reseed themselves each year. A little alsike clover, *Paspalum dilatatum*, and red-top grass planted on damp bottom lands produce excellent grazing. The seed of *Paspalum* are high in price and are low in germination, so it is rarely advisable to purchase seed. The best method is to strip the seed from plants by hand in October or November and sow them over the pasture lands at once, and immediately disk the land. A fair stand is often secured by scattering the seed on top of the sod and giving no further attention.

In portions of Texas and Oklahoma where conditions are so different from those in the Southeastern States some of the methods advocated above are undesirable. For instance, on some of the semi-arid lands, Bermuda grass, red-top, *Paspalum dilatatum*, and the clovers will not grow, and planting them would be a waste of time and money; but there are the native grasses, mesquite trees, and cactus, which furnish some feed for the cattle. Then, too, milo maize and kafir corn replace the Indian corn grown east of the Mississippi for forage crops. Alfalfa also does well on irrigated land and on some of the soils where as much as 33 inches of rain falls during the year. Kafir corn and milo maize will make excellent crops of forage under drought conditions which would destroy a crop of corn. They can be used as dry fodders and grain and they make a good quality of silage. Larger pastures will be required for cattle here than in the other States, as greater acreage is required per animal.

FUTURE METHODS OF IMPROVEMENT.

Briefly speaking, the plan farmers should follow as soon as ticks have been eradicated is as follows:

1. Get Bermuda or carpet grass started on all pastures. Improve the pastures further by sowing some lespedeza and bur clover on the uplands, and some alsike clover, white clover, and *Paspalum dilatatum* on the bottom lands.

2. Grow more hay and other forage on which to winter the stock; or, if a farmer has as many as 50 or 75 cattle, erect a silo.

3. Bring in good bulls of the beef breeds to use for grading up the native cattle. Do not try to raise pure breeds to begin with.

4. If not able to buy a bull for individual use, form a bull club, and let each member buy stock in the bull and place him on some central farm; or let one man buy the bull and the others obligate themselves to breed their cows to that bull.

5. Form a community club or a county live-stock association, so that members may exchange bulls every two years in order to get the maximum service from a bull without breeding him to his own offspring. The members of a club should agree on what breed they want to use and all get bulls of the same breed, in order that the community may develop a trade and make a reputation as growers of this breed.

6. If the bull is young, do not let him run with the cows, but keep him in a separate pasture and give him some feed each day so as to keep him growing.

7. Do not let a young bull serve a cow but once. One service is often better than a half dozen.

8. Heifers of the beef breeds should not drop calves until they are at least 30 months of age, and should be bred accordingly.

9. Breed the cows so as to calve during February, March, and April.

10. Castrate all male calves at an early age, either before or at weaning time.

11. Wean the calves in the fall, about the time the cows are taken from pasture. Give them plenty of good bright hay, silage if available, and about 1 pound of cotton-seed meal per day for the first month after taking them from the cows. After that they can be wintered on the roughages produced on the place, with a little concentrate. Cowpea or lespedeza hay is especially good for the calves, although there is no better roughage than silage.

12. The breeding stock may be given the run of the stalk fields until the middle of winter and then fed on the roughage about the place the rest of the winter. As the cows will be carrying calves, they should not be permitted to get poor, but should be kept in a thrifty condition.

13. If possible, dip all of the stock each spring and fall to keep them free of lice and to put their skin in good condition.

14. Farmers who have a number of cattle will usually have to let the bull run in the pasture with the cows. If this is the case, do not put him with them before May 15 or June 1, and take him away the 1st of September. By doing this the calves will be dropped in the early spring months. Owners of large herds of cattle should wherever practicable keep the steers in a separate pasture from the breeding stock, and the bull may be turned in with them during the season when he is not with the cows.

15. Never keep a grade bull for a sire if a purebred one can be secured.

The natural sequence to the formation of community clubs for breeding and raising cattle will be the cooperative shipping to such markets as show the greatest demand for the class of cattle to be sold. In counties where the farmers are largely raising one breed of cattle it is not hard to induce buyers to come, provided there is considerable stock for sale. One county might make a specialty of raising cattle for stocker and feeder purposes, while another might finish the cattle in the feed lots if conditions for this are favorable. The quality of cattle should improve constantly, and if it does the prices paid for them will also increase.

INTERVIEWS WITH CATTLEMEN AND FARMERS.

To ascertain just what effect tick eradication was having upon the cattle industry of certain sections of the South, a trip was made by three representatives of the Bureau of Animal Industry through Tennessee, Mississippi, and Georgia, visiting farms in counties which had been freed of the ticks, others where the work was in progress,

and still other counties where ticks were present in all pastures and where no effort had been made to get rid of them. The cattle were inspected and farmers, bankers, cattle buyers, and butchers were interviewed to see just how they regarded the work.

The first county visited was Madison County, Tenn., in which is located the West Tennessee Experiment Station. The experiment station is about $1\frac{1}{2}$ miles from Jackson. The land has been improved by growing leguminous crops and maintaining a herd of cattle for milking purposes, putting the manure back on the farm. The clovers, vetch, alfalfa, and various other forage crops were growing luxuriantly. The farm had been freed of ticks for some time and an excellent herd of Holstein cattle were seen, some of which were making wonderful milk records.

Mr. S. A. Roberts, the superintendent of the farm, made the following statement:

The cattle industry in those counties of western Tennessee which have been freed of ticks was never in a more prosperous condition than at the present time. More interest has been taken by the farmers since they have learned that they can bring in cattle from above the quarantine line without danger of loss from Texas fever. A number of good beef animals have been brought into the county for breeding purposes during the past year. Much interest is being taken in better dairy animals, too, and the West Tennessee Experiment Station can not fill the orders received for Holstein breeding stock. Many beef cattle are fed in the county and shipped to the St. Louis or Memphis market. This is strictly a livestock county, as all kinds of clovers and other forage crops do well and can be produced very cheaply.

Mr. J. J. Moffitt, who is a large cattle buyer and shipper of Jackson, Tenn., was next interviewed. Mr. Moffitt expressed his views about the tick eradication work in this way:

There was a great deal of opposition to the work at first, but now that our county has no ticks, the people realize the advantages of the work, and we would not go back to the old conditions for any amount of money. The greatest benefits have come from improving the quality of the cattle by bringing in pure-bred stock from above the line. About 500 head of cattle were fed in the county last winter. During the past year over \$50,000 worth of cattle have been sold, and they brought 1 cent a pound more when placed in the free pens at the market than if they had been sold from the quarantine pens. Cattle have brought good prices and we have received great benefits from the eradication of the tick. As the ticks are eradicated from all the other counties about here the good results will increase, because of the increased territory in which the cattle buyer can secure stock to ship.

Mr. E. A. Moffitt, of Jackson, Tenn., made the following statement:

I handle from 2,000 to 3,000 cattle a year, some of which I sell locally, and ship the rest to market. I am heartily in favor of tick-eradication work. The people in tick-infested counties have no idea how much money they are losing by the ticks, and they will never know until they have freed their premises and

seen the difference it will make in their cattle. The cattle that go into the free or native pens at the market bring from one-fourth to one-half cent a pound more than if they were sold in the quarantine pens. Recently I shipped some cattle from this county and some similar cattle from a ticky county to the same market. The cattle that went from this county into the native pens sold for 40 cents more per hundred pounds than did the quarantine cattle, because the tick-free cattle could be sent out into the country for stockers, whereas the ticky cattle had to be sold as canners for immediate slaughter. Another bunch I sold in the quarantine pens brought at least half a cent less per pound than they would if I could have sold them on the opposite side of the fence. Another reason the quarantine cattle bring less is because there is no competition between the small butchers and the packers for these cattle. They must be slaughtered at once, and the small butcher can not use a carload at one time, whereas he can buy a car of native cattle and put them in the feed lot or on pasture and slaughter them just as he needs them.

The cattle here at home have increased in value at least a half a cent a pound since the county was pronounced free of ticks, for the local butchers had to meet the advance in price which was paid at the market or lose the cattle. Cattle can now be bought in Hardeman County, Tenn., at $3\frac{1}{2}$ to $3\frac{3}{4}$ cents a pound that would bring me 5 cents a pound here if I could ship them in. I could use 400 head of Hardeman County cattle right now at their prices if I could ship them here.¹ After people once see the advantages of being rid of ticks they will be careful never to let ticky cattle come on their place again. The cattle in this county are improving in size and quality, because breeders are now bringing in good breeding cattle without the fear of losing them from Texas fever.

Mr. J. D. Mason, of Jackson, a large buyer of cattle, was also interviewed, with the result that some surprising figures on the losses of cattle near Jackson were brought to light. He is quoted as follows:

The opposition to the tick eradication work is due to ignorance alone—ignorance of the damage done by the tick, of its life history, etc. I lost several thousand dollars' worth of cattle myself before I was convinced that the trouble was the tick. Before this county was cleared of the tick the people of the city of Jackson and the surrounding territory lost \$5,000 to \$8,000 worth of cattle every year. The cause was not then known. These cattle were chiefly milch cows that were kept in town and sent to surrounding pastures which were ticky in the summer. Since the ticks were eradicated the loss has been practically nothing, being less than \$100 a year.

Eradication is a great boon to the cattle buyer who formerly lost so many cattle when buying odd bunches here and there over the county. The cattle would mix, and many of them would become ticky and die. Buyers can now pay the farmer better prices for cattle, because the risk is avoided. In other words, the eradication is an insurance policy for the cattle buyer.

The sentiment expressed by farmers or cattlemen is not always the same as that of other conservative business men, such as bankers. As the attitude which the bankers take toward any line of work has very material influence upon it, Mr. C. B. Caldwell, who is cashier

¹ This statement was made while a portion of Hardeman County was still in quarantine. The remainder of that county has since been released (Sept. 1, 1913).

of the First National Bank of Jackson, Tenn., was next interviewed. He said:

I am heartily in favor of tick eradication and believe it is only a question of a few years until the whole South will be carrying on the work, and soon after that time the whole country will be free. Then we can produce the cattle which are so badly needed at the present time.

I have 30 head of Angus cattle, and can not supply the orders I get for breeding stock. I could sell 10 young bulls right now if I had them. All of my stock are sold as yearlings, for which I get \$50 to \$100 each. It has been 10 years since there have been any ticks on my place, and I wouldn't have any get started there now for a thousand dollars. There has never been any money spent by this county to better advantage than that spent in helping to eradicate the cattle tick.

The other men who were approached on this subject were of the same opinion as those quoted above concerning the value of the work. Everyone seemed to realize that the county was in a position to raise better cattle at a greater profit than ever before. Some of the men who had formerly been the bitterest enemies of the work, declaring that clearing a county of cattle ticks was an impossible task, were loudest in praise of the work after it was completed.

From Madison County a trip was made to the Lespedeza farm, at Hickory Valley, Hardeman County, Tenn. Much of the land passed over was poor in fertility, due to the treatment it had received in the past, but very little of it was soil which could not be easily and rapidly improved in fertility by the use of legumes and live stock. All of it could be made to grow excellent pasture grasses, as was shown at the Lespedeza farm. This farm, which now consists of about 16,000 acres, of which 2,500 are in cultivation, was formerly an old worn-out cotton plantation, so poor that much of it had been abandoned and permitted to grow up in sedge grass, brush, and briers. Quite a little of it was covered with a natural growth of timber.

The present manager wished to convert it into a stock farm, but there were two great drawbacks: (1) it was as ticky a place as could be found anywhere, and (2) it was so poor that little feed could be raised at first, and the pastures were very poor in quality. The cattle on the place were scrubby, stunted animals weighing from 500 to 700 pounds and covered with ticks.

A stock farm was to be made, however, so the first thing to be done was to fence the entire place and put double fences about 7 feet apart along the public road so that animals passing along the road would be unlikely to get inside the pastures. A dipping vat was installed, all of the cattle on the place were collected and put into a pasture near the vat, and the gates to all of the other fields were locked. The cattle were dipped every two weeks during the summer, and in a year the entire place was free of ticks. The ticks were

starved in the unoccupied pastures and killed by dipping the cattle which were kept in the other pasture. Since that time not a tick has appeared on the entire property.

The problem of improving the pastures and the soil was also taken up. Lespedeza seed was scattered over the pasture lands in the early spring, and a number of small fields were plowed up and planted with mixtures of different kinds of seed, such as red clover, alsike clover, lespedeza, fescue grass, orchard grass, red top, and blue grass. The cultivated lands were planted in corn, sorghum, cowpeas, soy beans, rape, and other forage crops for cattle and hogs, and in the fall were planted with various grains, including rye, oats, wheat, vetch, etc. These fields were grazed during the winter by the stock, and in the early spring permitted to grow up, and the



FIG. 3.—Purebred Shorthorn bulls on a Tennessee farm free of ticks.

crop was then plowed under with disk plows or deep-tilling machines. Silos were built and filled with silage made of sorghum, corn, and soy beans. Some of the best Shorthorn cattle that could be bought in Kentucky were brought down and grazed on the meadows during the summer, and wintered on the farm-grown feeds and some cottonseed meal. All of the cattle did exceedingly well from the start, and since that time a herd has accumulated which ranks among the best in the United States. Some of these cattle are shown in figures 3 and 4.

The native cattle which were formerly on the place were put into different pastures from the purebred cattle, and purebred Shorthorn bulls were put with them. The scrub cows were valued at \$12 to \$20 a head, but they produced some very fine calves by the Short-

horn sires. The calves were taken away from their dams in the fall and fed on farm-grown feeds. When fat they weighed 870 pounds each on the farm and ranged from 15 to 18 months of age. They were shipped to the Chicago market, where they averaged 800 pounds in weight and sold for 8 cents a pound. Scrub cows worth about \$17 each when bred to good beef bulls, therefore, produced calves which at less than a year and a half old sold for \$64 a head. Those calves never had a tick on them; their mothers had been kept on good pastures, and they received good treatment from the time they were born until they were sold.

What has been the result of this kind of farming? There are to-day on this farm crops which five years ago it would have seemed



FIG. 4.—Some excellent Shorthorn heifers raised on a Tennessee farm.

impossible to grow, a herd of over 200 purebred Shorthorns, another of more than 200 grades and native cows, good barns and other farm buildings, beautiful cottages, and some of the finest meadows of clover and grasses to be found anywhere. Nine large silos, two of which have a capacity of 300 tons each, are filled with silage each year; there are large barns in which to store the cowpea and other kinds of hay produced, and several hundred good hogs and sheep are kept on the place. The whole property is divided by good fences into numerous pastures, fields, and paddocks. The immense amount of manure produced is hauled direct to the fields, and this, together with the legumes planted and the green crops which are plowed under with deep-tilling machines pulled by a gasoline "caterpillar" tractor, or walking plows drawn by large Percheron mares, is build-

ing up the soil to a high state of fertility. Two large draft mares replaced four medium-sized mules at the disk harrows and other machinery. Everything is done in a progressive, businesslike way, and the farm stands out as a shining mark of progress and a good example for others to follow. While things can not be done on the small farm in the same way as they can on this large one, nevertheless this place is an outstanding example of what may be accomplished on thousands of farms all over the South with respect to eradicating the cattle tick, improving the pastures, building up the soil, growing plenty of forage crops, raising good stock, and having farm buildings and a home of which one may be proud.

The manager, Mr. Dan S. Combs, made the following statement:

Tennessee can produce just as good cattle or other forms of live stock as any State if the people will first get rid of the ticks, improve their pastures, build up their soils, and use the same care in raising their stock as do the farmers in other sections of the country where good cattle are produced.

We have a magnificent herd of cattle, which will compare well with any herd, and we can produce them cheaper here than can be done in the North. There is no trouble in selling our breeding stock at good prices, and many of the young bulls are going into those counties in Mississippi and Alabama where tick eradication work is being conducted.

There is a great opportunity in the South for the stockman and farmer, and the number of good bulls which are sold in counties where eradication work is being carried on are bound to leave their impression on the cattle of those sections.

A visit was made to the farm of Mr. J. M. Aldrich, of Michigan City, Benton County, Miss. The story of his work is given here:

My place consists of 1,400 acres of land, which was formerly an old, worn-out cotton plantation. The land was so poor when I bought it that but two bales of cotton and 40 bushels of corn were produced on it the previous year, the remainder of the land being considered too poor to cultivate. This place was free of ticks until about 10 or 12 years ago. I was a cattle buyer and brought in cattle from various counties surrounding Benton, and, finally, shipped in some cattle from central Mississippi. These cattle were covered with ticks, but nothing was thought of it. In about two or three weeks some of my cattle began dying very suddenly, three being found dead near the center of the pasture one morning. At first I thought someone had given them poison. Some of the sick ones were brought to the barn, fed and doctored, but most of those which became sick died. I noticed also that none of the cattle which I shipped in died, but they did well on pasture, while many of the cattle already on the place got sick. My loss was heavy. Soon after this I heard that ticks gave cattle Texas fever, and that the symptoms were practically the same as those from which my cattle died. When I learned the life history of the tick and began reading about Texas or splenic fever, I knew that the ticks had caused the damage. I remembered, too, that I had found ticks on most of the cows which died, and as the cattle from central Mississippi had been accustomed to the ticks all of the time, that accounted for none of them dying.

I began hand-greasing my cattle. Every time they would show many ticks I would have them rounded up and grease them. I used every kind of grease or solution I heard of, but this method was very unsatisfactory, as grease could

not be put on all of the ticks, for some parts of the cattle would be skipped over in the hand greasing. For four years I did this, and it was both hard and expensive work. At the suggestion of a tick inspector of the Bureau of Animal Industry who visited our county I built a dipping vat, the first one in the State of Mississippi. After dipping was regularly taken up it did not take long to free my cattle of ticks.

When tick eradication was first started in this county there was much opposition to it, due to ignorance of the work and all kinds of misrepresentations made by people opposing it; but as the work progressed this sentiment died out. Since the county has been released from quarantine I do not believe a man could be found who will say that the work was not of great benefit to everyone.

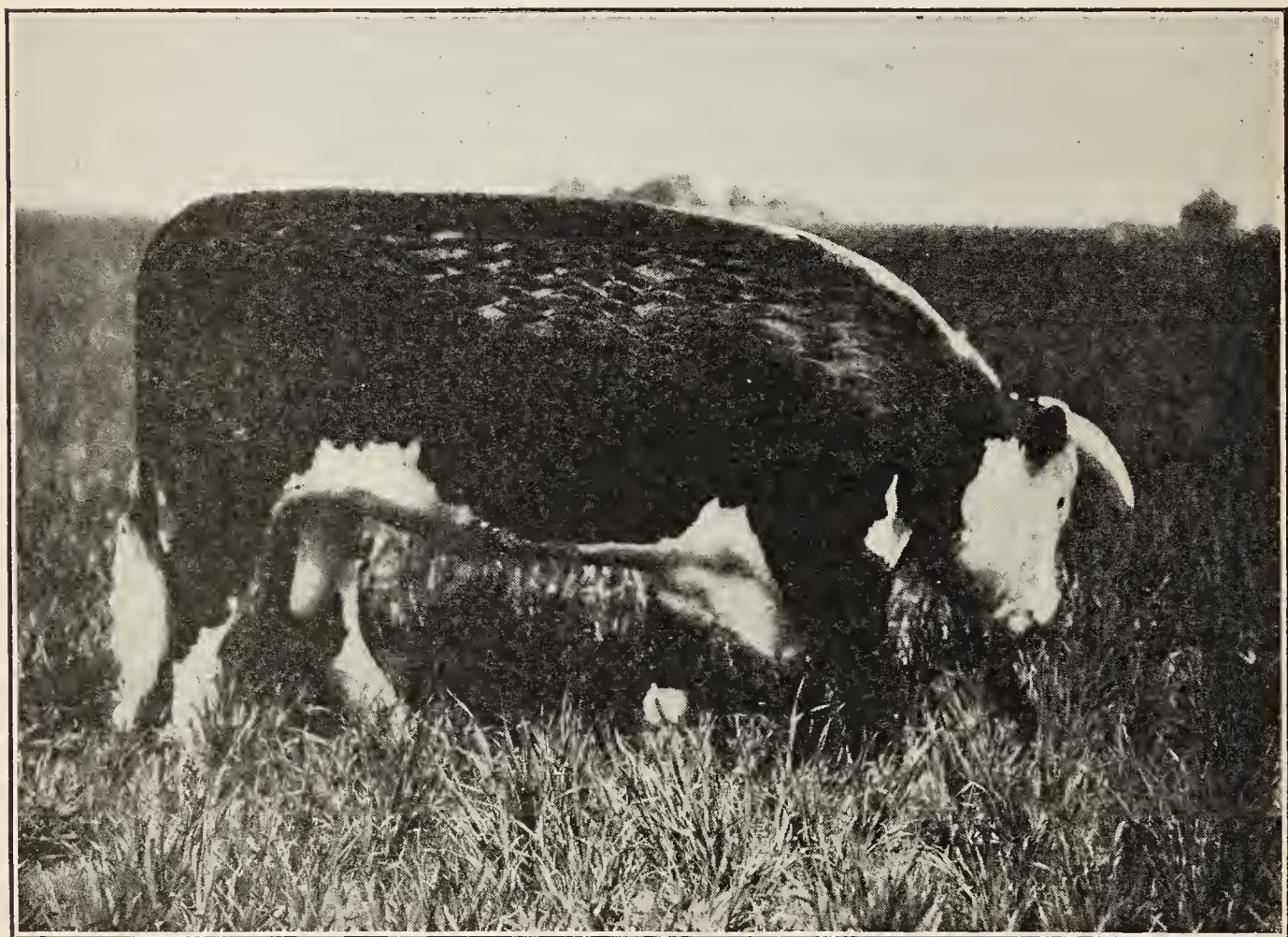


FIG. 5.—A Hereford bull in Mississippi, McCray Fairfax, 361803, grand champion Hereford bull at the National Feeders and Breeders' Show, Fort Worth, 1913. This is the type of bull which should be used in breeding up the native southern cattle. (Courtesy of La Vernet Farm.)

My herd of cattle contains about 50 registered Angus, the remainder being grades and natives. Last fall I took my grade calves from their dams, started them on a ration of corn silage and cottonseed meal, and fed them for 120 days, in the barn. They made good gains for the whole period, and sold for $7\frac{1}{2}$ cents a pound this spring. Accurate records were kept of all the feeding, and I made about \$15 profit on each of them. Hereafter I will fatten some cattle for the market each year, and expect them to do even better than they did this year.

I have no trouble at all in selling all of my purebred yearlings at good prices for breeding purposes. In fact I have no bulls on hand that are for sale at the present time. The cattle industry of this county is now in the most prosperous condition that it has ever experienced. Many cattle shippers who formerly sent most of their cattle to the New Orleans market are now shipping to St. Louis, because their cattle go in the native pens and bring better prices than

if sold as quarantine cattle. This increase in value of the cattle sold on the markets should be inducement enough to make any people exterminate the tick without considering the many other benefits which accrue from such work.

Hinds County, Miss., where the people have made such progress in exterminating the tick that the county has been released from quarantine, was visited. The farm of W. J. Davis & Co. was first inspected. On this farm are to be found some fine specimens of the Hereford breed of cattle. There is a large herd of them, and all are in excellent condition. The breeding cows on pasture were in superb condition for grass cattle and showed they had received good treatment during the winter months. The young stock looked exceedingly well and were very growthy and vigorous, in great contrast with the calves usually found in the State.

In an interview with Mr. Davis he made the following statement:

There is no doubt about the ill effect which ticks have on all cattle in general and young growing stock in particular, but one of the hardest questions we ever had to decide was whether or not to eradicate all ticks absolutely from our farm, or to try to keep them in check, but still have enough so that all of our cattle would get some upon them and thus be accustomed to them. Our situation was a peculiar one, for we are not raising cattle for beef, but raising pure-bred stock to sell to southern farmers for breeding purposes. The amount of breeding stock we have sold in the North is small and possibly never will be large, for we want to cater entirely to the southern trade, and it was a question whether we would hold this trade if we got rid of all ticks and could not sell our cattle to men who lived in tick-infested districts. We would then be in the same position as the northern breeder in regard to selling stock in the South. At first we thought it better to keep our premises lightly infested, so that we could sell breeding stock to go into quarantine territory, and dip under Federal inspection those cattle which we wished to ship into free territory.

After studying the question seriously, however, from every possible angle, we became convinced that with the progress Mississippi was making in tick-eradication work it would not be long until most of the State was free from ticks, and that the work would evidently make great progress in neighboring States; also that in the counties which exterminate the tick are the farmers who are first going to buy the largest number of good bulls, for these counties will very probably develop quickly into the best live-stock counties of the State.

Immediately we began regularly dipping all animals and soon cleaned up the entire place. Now we are glad of it, for not only are we relieved from the losses of animals and the stunting of others from tick fever but we see that our surmise was right about the men who would purchase our surplus stock. All farmers who are progressive enough to desire to raise good cattle or registered cattle will interest themselves in tick eradication in order that they may raise their stock more profitably.

The next farm visited was that of Mr. A. A. Morson, of Jackson, Miss. Mr. Morson keeps a good herd of Jersey cattle, milking from 40 to 50 cows at all times of the year. He buys the best Jersey bull he can find for the head of his herd, for he recognizes the importance of the sire in raising calves for future use. He was two years in getting his farm completely free of ticks, but he did not get started to

dipping until late the first year, and then did not dip regularly. During this summer he lost several good calves from tick fever, and after that he dipped constantly until all of the ticks on the place were exterminated. He says the milk flow of his herd has increased and they are in better condition than ever before at this time of the year.

Hinds County has been one of the many Mississippi counties which have made enviable records in tick eradication. After the people became convinced it was a good thing the dipping was taken up by all stock owners and prosecuted so regularly that premises were rapidly cleaned up.



FIG. 6.—The type of Hereford cows which should be raised in greater numbers throughout the south. (From a Mississippi herd.)

From Hinds County a trip was made into Copiah County, which had just begun the fight on the cattle tick. This county was one in which the cotton industry was almost destroyed by the boll weevil, but the farmers retained their labor and began diversified farming and trucking with such good results that they are to-day in better shape financially than they have been for 10 years. The cattle industry had never received much encouragement in this county, and as a result the cattle, although found in goodly numbers, were the native scrub stock that is still so common in some parts of the South. They looked far more scrubby and worthless after seeing such magnificent beef cattle on the farms previously visited. These people are aware of the progress made in adjoining counties and have determined to build up this valuable industry. As a result a campaign is being made against the tick and for good cattle.

The farm of Mr. Ben Ramsey, near Hazelhurst, was visited and 250 native tick-infested cattle were inspected. In this herd were yearlings weighing less than 300 pounds and 2 and 3 year old cattle weighing about 500 pounds. There were native cows weighing 700 to 750 pounds, however, which, if bred to a purebred beef bull, would produce good calves. Mr. Ramsey said:

Last year I branded \$68,000 worth of cattle and nearly all of them were just such scrubs as you see here, but there were a few good grades among the young stock. Since the boll weevil put the cotton farmer so nearly out of business here the number of cattle on the farms has increased rapidly. Good bulls are being brought in, and as soon as the tick is exterminated the cattle industry in this county is going to come to the front.



FIG. 7.—The type of cattle usually found throughout those sections of the South where ticks still prevail. (Taken in Copiah County, Miss.)

Other farmers expressed similar views. Some stated that about $2\frac{1}{2}$ acres was allowed per cow for summer grazing, and that this amount of land furnished plenty of grass. By planting other grasses and clovers on these lands they could be made to produce three times as much grass and hence graze three times as many cattle.

From Copiah County a trip was made to Adams County, and thousands of acres of good pasture lands were passed over, a large percentage of which was still idle. However, new fences could be seen quite frequently, which indicated that more of this land than formerly was being devoted to grazing.

Adams County was one of the pioneer counties of Mississippi in tick eradication. The county is composed of hill lands and large areas of lowlands adjacent to creeks or the river, which furnish excellent pastures for live stock. This county was damaged by the boll weevil to a greater extent than any other county in Mississippi. When the weevils appeared in large numbers the farmers became demoralized and immediately discontinued the credit system in supplying the negro labor. The result was that most of the laborers left the county for the delta lands north of there or the rice fields of Arkansas. The cotton yield dropped from 25,000 bales to about 1,100. The land was permitted to lie idle. In 1912, however, the overflow of the immense Louisiana territory by the Mississippi River forced the planters to ship thousands of cattle to Natchez to be pastured until after the water went down. These cattle came in by boatloads, covered with ticks and so poor they could hardly be driven to the pastures. All of them were dipped on arrival and every two weeks thereafter while they were in Adams County. All were dipped before going back to Louisiana, so they were free of ticks when they arrived on the Louisiana plantations. The overflow had drowned the ticks on these plantations, as most of the land was submerged from 4 to 7 weeks. The result was that the cattle fattened to a greater extent that fall and passed through the winter in better shape than can be remembered by the oldest inhabitants. In commenting on this, Mr. R. L. Parker, of Natchez, Miss., a large buyer of cattle, made the following statements:

In the spring of 1912 cattle were brought into Natchez by the thousands from the overflowed districts of Louisiana. These cattle were so poor and weak that they sold very cheap, some for little over 2 cents a pound, or some whole herds of cattle for \$10 around, because the loss from them would be heavy, due to their emaciated condition. Many were so weak that they gave out and died in the road while being taken to pasture. All were dipped on arrival and continuously during the time they remained in Adams County, and those which were returned to Louisiana were free of ticks. The plantations were freed of ticks because of the long inundation. The result was that the cattle fattened rapidly and wintered in fine shape.

This spring (April, 1913) when these same cattle were brought out of the lowlands because of the overflow they arrived in Natchez fatter than any cattle I had ever seen come out of Tensas or Concordia Parishes at any time of the year. They looked so well that few of the owners would sell, and even then only at prices ranging from 5 cents a pound upward. Some of these native cows I purchased at \$50 a head for beef. This difference in price for the two years 1912 and 1913 was due to the condition of the cattle, and the difference in the condition was due almost entirely to the absence of ticks from the pastures, although the mild winter of course had some influence.

If the cattlemen in the alluvial lands of Mississippi and Louisiana will get rid of the ticks, there is no section of the country which can grow cattle cheaper or with greater profit. The past two seasons have demonstrated most clearly

to all of the people in this overflowed area how much better cattle will do when kept free of the ticks. If the counties or parishes in this section will appropriate some money for the eradication of ticks in these areas, the work can be accomplished at a very small cost, as few of the plantations have ticks on them, because of the overflow this year. Now is the time for the work.

A visit was made to the plantation of Messrs. Suzette & Minor near Natchez, and a fine herd of about 300 Devon cattle were inspected. This herd has been tick-free for almost two years except for a few months in 1912 when a portion of the premises became reinfected and a number of fine calves were lost from Texas fever.

All of the cattle were in good condition for the time of the year, and a beautiful herd of small calves was seen. The breeding cows



FIG. 8.—Part of a herd of 300 purebred Devon cows on a tick-free pasture in Mississippi.

were fat, and many of them had large udders, showing that they gave a heavy yield of milk, besides making good beef animals.

Mr. Minor said his cattle had kept in far better flesh the year through, and the young stock grew much faster since the cattle had been kept free of ticks. Also, that a man could not believe how much fatter cattle would become if kept free from ticks, unless he actually saw a herd of cattle before and after being cleaned of ticks. The demand for breeding stock has been excellent, and they had sold everything they had to offer this year.

A herd of Red Polled cattle from Louisiana, which belonged to Mr. A. G. Campbell, a banker of Natchez, was also inspected. These cat-

tle were in fine condition and had been freed of ticks for over a year. The following statements were made by Mr. Campbell:

My cattle have never seemed to thrive better or fatten more easily than they have since they were cleaned of the cattle ticks. They wintered in fine shape and were fat for grass cattle by the 1st of May. I know of no one thing which would help our farmers more than freeing the whole South of this pest, which has done so much to retard the cattle industry. This is a good stock country, and the farmers who raise good cattle should make money by it.

The farm of W. S. Lovell, at Palmyra, Miss., was not visited but the conditions on this farm are familiar in every way to the author of this bulletin. Mr. Lovell has done much to encourage the growing of more and better live stock in Mississippi. In 1911 a herd of steers raised and fed by him and shipped to the St. Louis market sold for the highest price ever paid for Mississippi cattle on that market up to that time. Last year there were on this farm 700 head of pure-bred and high-grade Hereford cattle which had never been subjected to the ravages of the cattle tick.

Mr. Lovell wrote as follows under date of June 19, 1913:

Replying to your recent inquiry, will say that, as you know, owing to frequent overflows, my place at Palmyra, Miss., is free from cattle ticks. The advantage of this fact is clearly shown in the cattle that I am raising in comparison with those raised within a few miles, where the pastures are tick infested.

There is one disadvantage in being free of ticks and surrounded largely by tick-infested territory. Last year I shipped about 700 head of cattle to Natchez, in Adams County, which was then tick free. Many thousand head of cattle were brought into Adams County from tick-infested districts during the overflow and broke through the fences holding my cattle. As a result I lost 28 head from tick fever, and those that did recover were so weak that when they were taken back to the plantation whenever they got in a bog they died because they didn't have strength enough to pull themselves out. I can certainly say without hesitation that any man is a fool to raise cattle with ticks on them when he can rid them of the ticks by dipping.

The best way to convert an antitick-eradication advocate is to let him dip his cattle for six months and see the improvement in them. Let him weigh them before he starts dipping and again when they are free of ticks.

There were a few farms in Adams County which were reinfested with ticks from cattle brought in from the overflowed districts. All of the cattle were dipped on arrival, but evidently there were some mature ticks which the single dipping did not kill. These premises are being held under quarantine and the cattle dipped regularly until they are absolutely free once more.

Mississippi has made some wonderful strides in the eradication of the cattle tick, and the people of that State are to be congratulated on the work.

The stockyards and packing houses at Atlanta, Ga., were next visited. At the present time the stockyards at Atlanta do not handle

great numbers of cattle, but the city of Atlanta is so situated that some day a good market may be developed there. It would be a central point to which the farmers of Florida, Georgia, Alabama, Tennessee, and North and South Carolina could ship their cattle.

There is no one who is more capable of telling whether the cattle of a State are improving than the commission men or the packers at the market where those cattle are sold. They see the stock daily for years, and the buyer for a packing house has to make a study of the cattle which he purchases in order to know what he can pay for stock. His knowledge extends from the animals as they stand in the yards until the carcasses are weighed in the coolers. Recognizing these facts, several men representing commission men, packers, or butchers were interviewed.

Mr. F. A. Suttles, of the firm of A. L. Suttles & Co., commission men and wholesale butchers, made the following declaration:

Most of the cattle which are sold on this market come from Georgia, South Carolina, Tennessee, and North Carolina. A large percentage of the cattle coming from the latter two States are fed cattle, but some fed stock comes from central and south Georgia. Mr. W. P. White bought 250 head of cattle of Mr. Comer, whose farm is near Savannah, Ga., and shipped part of them to this market. These cattle were sold for 7 cents a pound on the farm. One car of this lot which was shipped to this market contained 15 grade beef calves ranging from 16 to 18 months old and weighing an average of 634 pounds. They sold for \$7.37½ per hundredweight, or \$46.75 per head, which is not a bad price for yearlings.

Georgia has just as good land for raising cattle as Alabama, Tennessee, or Mississippi, if the farmers would only plant some grasses upon it. The tick is undoubtedly a great drawback to the cattle business, and cattle do much better where they are not bothered by this pest.

In an interview with Mr. T. A. Plaster, cattle buyer for the White Provision Co., of Atlanta, he expressed his views regarding the cattle situation thus:

Better cattle will naturally come in the wake of tick eradication. The cattle that are here will improve in quality and better cattle will be brought in for breeding purposes. The effects of this improved blood will show up within a few years to a considerable extent. The quality of the cattle in Georgia is improving some, and more cattle are fed than formerly. We get some good fat cattle from central and southern Georgia during the winter and spring months, but the people of north Georgia do not furnish many cattle. Good cattle could be raised all over the State if the farmers would try. We expect the cattle business to improve right along. The State law which requires all cattle shippers to have their cattle free of ticks before they can be moved is a good law, and it will not be very hard for the shipper to dip, spray, or use some other method of cleaning the cattle of ticks. This law has not bothered our trade in the least.

Mr. J. K. Shippey, of the firm of Shippey Bros. & White, is quoted as follows:

The quality of the cattle sold in Atlanta has improved quite a little in the last six years. The greatest amount of improvement is yet to come, however,

for the distribution of good beef bulls has not been very extensive in Georgia. This is shown by the cattle sold on the market. Nevertheless, a start has been made, and other improvements should follow. The new law requiring all cattle to be free of ticks before they are moved from place to place has not affected the receipts of cattle at all. We are anxious to cooperate with the tick-eradication officials in any way we can for the betterment of the cattle industry, and the extermination of the cattle tick will be one of the greatest blessings which could come upon the farmers.

VIEWS OF COUNTY OFFICIALS.

To obtain further information of the attitude of the people toward the work of tick eradication, Dr. J. A. Kiernan, of the Bureau of Animal Industry, wrote to the county board of supervisors or the county health officer of counties in which tick eradication had been completed, asking if they had derived any benefits from the work. The answers received from the different county officials are given below. Many of these statements show clearly that material benefits far in excess of the cost of the work are received in a short time.

From Hon. Frank L. Lynch, county judge of Franklin County, Winchester, Tenn., April 25, 1912: The work of tick eradication was finished in this county last year. I do not think that during my tenure of office, covering 10 years, I have done anything that has been more generally approved by and was of more material benefit to the people in this county. Practically all of our farmers raise more or less cattle, and many cattle are shipped out now from this county each year; and by virtue of being a free territory the farmers realize from \$6 to \$10 a head above what they did when we were under the quarantine.

From Mr. J. C. White, president of the Rankin County and Lincoln County Live-Stock Association, Brandon, Miss., December 1, 1912: In response to your letter asking for a description of the work done in behalf of tick eradication in Rankin County, with my opinion of the same, it gives me great pleasure to state that this work was started under many difficulties about November 10, 1911, by building the first vat near Brandon. The work of building the vats continued through the winter, being necessarily slow on account of the roads and bad weather. We commenced the dipping of cattle under inspection May 1, 1912; several vats were not finished until 30 days later. This dipping was continued regularly all through the season, and in October, 1912, the Government showed that Rankin County dipped more cattle than any other county in Mississippi. The results have been as follows: Cattle have grown better, fattened faster, and sold for more money for the same class of animals than during any previous season. Cattle buyers from other counties not engaged in tick eradication at all times endeavor to bring their cattle from surrounding territory to be dipped and shipped out of Rankin County so they can receive the increased price for them.

The work has been in progress under inspection only since May 1, 1912, and at the present time over three-fifths of the county has been recommended by the United States inspector in charge for release from quarantine April 1, 1913, after which it will be free territory. The rest of the county will probably be released a short time after.

In the present forward state of the work which is now so near completion, the cost so far to Rankin County has been about \$4,000, or 20 cents per head for the estimated amount of grown cattle in said county; and the work will probably be finished at a cost all told of from 25 to 30 cents per head.

I can not too highly indorse the work of tick eradication, judging by the benefits already received. As conditions in this county have changed to such an extent by the introduction of the boll weevil in the last few years that it is now impossible to raise our staple crop—cotton—in paying quantities, we must depend on cattle as our source of ready money from this time on; and they can not be raised with profit without tick eradication.

From Hon. George P. Burnett, county judge of Cumberland County, Crossville, Tenn., April 19, 1912: Some five or six years ago Cumberland County became infected with the cattle tick. Steps were immediately taken by the department to eradicate the tick, strict quarantine regulations were established, and all proper and necessary steps taken for the complete eradication of the disease. Within 12 months the quarantine was raised, and our county has been free from the cattle tick ever since. There is not to my knowledge a single neighborhood where the tick can be found.

The injury to our county by the infection was great, since cattle raising is one of our chief industries, and had the disease continued I know of no other one thing that could have brought a greater loss to our farmers and cattlemen.

From Dr. E. W. Hale, commissioner of health for Shelby County, Memphis, Tenn., May 14, 1912: In answer to your letter in regard to the results of the work of tick eradication in Shelby County, would say that we have been engaged in this work for about five years. When the work was begun the cattle from this county sold for about 3 cents a pound gross weight; now they bring from 4 to 5 cents per pound. Much of this results from tick eradication. When we first began this work cattle could only be shipped to other markets three months in the year, and then only for immediate slaughter, and now they can be shipped out of the county to any market at any time and without any restrictions.

For the first two or three years there was great opposition from the farmers and great difficulty on the part of this board in carrying on the work; now the farmers see the great advantage of it, and they cooperate with us in every way. There has been new interest felt in cattle raising in this county, better grade of stock, more buyers, better prices, and many more shipped to other markets.

The ticks have been practically eliminated from the infected pastures. In short, the cattle industry has been revolutionized in this county, and in a few years the value of the cattle industry will be increased to an extent that would seem incredible. The work is now being fully appreciated, and what was at first condemned and opposed from almost every quarter is now being praised and assisted by all our farmers.

From Hon. J. R. Hogue, county judge of Overton County, Livingston, Tenn., April 20, 1912: The people of Overton County are highly pleased with the result of tick eradication here. The quarantine has been lifted and our cattle go on the market in much better condition than before and therefore bring better prices, because they get much more flesh, both on the wild ranges and in the inclosed pastures.

We have absolutely gotten rid of all ticks of every kind which were here in abundance four years ago. The eradication of the cattle tick was the greatest boon to our stock farmers of anything that ever has been or could be done for them, and now they know it; but when the movement first struck this county it was the most unpopular thing ever heard of, and now is the most popular.

From Hon. W. H. Potter, county judge of Scott County, Huntsville, Tenn., April 22, 1912: In answer to your letter of the 18th instant in reference to the tick question, we had some ticks up to last year, but for the last year no ticks

have been found in my county. The county authorities have had a tick inspector until the last year, and we don't find that there are any ticks here now and have no inspector this year. If it should be that we find any ticks we will have an inspector and destroy what we can. As I now see it, the ticks will soon be exterminated. I hope that the people will use all of the precaution that they can to rid the country of this pest.

From Mr. T. M. Gailbreath, chairman of the county court of Jackson County, Gainesboro, Tenn., April 28, 1912: In reply to your letter of the 18th instant will say that the people of this (Jackson) county are highly pleased with the eradication of the cattle ticks. Our cattle can be sold in an open market and bring much better prices; can be marketed at any season of the year without inspection, which is a very great advantage over the conditions existing before we got rid of the ticks. Young cattle grow much faster and get fat on the pasture and on the range. Milch cows do much better in every way, giving more milk and keeping in better condition and much easier wintered. It would be hard to estimate the benefit the farmer and stock raisers have derived from the eradication of the ticks, the benefits being seen and appreciated in so many ways.

From Dr. J. F. Adams, county health officer of Cannon County, Bradville, Tenn.: Replying to your favor of the 6th instant regarding estimate of benefits received from tick eradication in this county, will say that while the work was in progress the men in charge met with more or less friction, and often I have heard it said that tick eradication was not going to be of any value to us, but since the quarantine has been raised our cattle have brought better prices than ever before, and farmers have entered into the business of raising cattle with renewed energy, so that now our cattle industry is a source of far greater revenue to the farmers of this county than ever before. Aside from getting rid of the tick we have been educated in many ways, and at least a part of our improved methods of farming is no doubt directly due to lessons we learned while tick eradication was in progress. Certainly the work can not easily be overestimated in a county like ours, where the raising of cattle is a source of so great revenue and where so much improvement in this industry is now being made manifest. Our farmers are enlarging their herds and improving the breeds, and coming as it does directly in the wake of tick eradication forces us to the conclusion that the educational value of tick eradication is worth the money we expended here.

From Hon. Charles T. Williamson, county judge of Marion County, Jasper, Tenn., April 19, 1912: Farming and cattle raising are the chief industries of Marion County, and in the eradication of the cattle tick the citizens have been greatly benefited. In fact this has done more to increase the profits of the farmers and encourage the raising of blooded cattle than any one occurrence in the history of the county.

Since this county has been placed above the quarantine line there has been a marked increase in the cattle business, and that is the avocation this section is especially adapted for. Just the fact that cattle are raised and fattened above the quarantine line makes a perceptible difference in the price per pound in the northern and eastern markets.

This stroke of progress not only caused hundreds of farmers of this county to invest in blooded cattle, but along with this advancement came improved farming methods. It is natural that when a man gets one thing of the best he then strives to bring all his interests up to that standard. This is being done in this county, and we are now farming more intelligently and getting better results.

The eradication of the cattle tick is a great thing for Marion County, and all the citizens highly appreciate this commendable work.

From Hon. L. E. Davis, county judge of Benton County, Camden, Tenn., May 1, 1912: Almost three years ago we took up the work of tick eradication in Benton County. We met with a great deal of opposition at first, but at the end of the first season the results were so marked that many who first opposed the work came to us and expressed themselves as entirely satisfied that it was possible to rid our county of the tick—and we got a large proportion of our territory released from quarantine the first year. But where we did not get the cooperation of the people the work was slow, and the result was that we have a small portion of our county quarantined yet, but we hope to get entirely free this year, and possibly by the 1st of July. At our April term of county court the question was before the court, and the justices that had always fought it before spoke in favor of it and said that the end seemed so near that they could not afford to oppose it any longer, and besides they were convinced now that it was possible to rid a county of ticks. The cattle industry has grown in our county and prices have more than doubled.

In conclusion, I feel safe in saying that our money has been well spent, and I believe our people are well satisfied with the work and are fully agreed that any county or territory can rid itself of the fever tick under Government supervision.

I hope this will be an encouragement to some others to take up the work and push it to a finish, for cattle are too precious for the tick to eat.

From Hon. Ward R. Case, county judge of Fentress County, Jamestown, Tenn., April 22, 1912: Replying to yours of the 18th instant, will say, while there was at first some hostility on the part of the farmers toward the authorities endeavoring to eradicate the cattle tick, there are now but four or five farms infected, and I believe the people generally appreciate what has been done for them and are taking an increased interest in improved methods of stock raising and farming.

From Mr. J. R. Brown, chairman of the county court of Bradley County, Cleveland, Tenn., May 10, 1912: I take great pleasure in stating that the progress made in the eradication of the cattle ticks in Bradley County, Tenn., is entirely satisfactory to all the people of the county. We have rid our county of all the ticks, with the bare possibility of one farm, for the year 1912. There were no deaths or sickness for 1911.

There is no one in Bradley County who would dare make an unfavorable criticism of the good work and results of the completed work. To say that everybody is delighted with the eradication of the ticks is to put it mildly.

The price of cattle has more than doubled. The first eight months after we got above the national quarantine line our people sold and had shipped between thirty and thirty-five thousand dollars' worth of cattle for more than twice the former price. The interest in live stock has had a great uplift, since we can raise and keep our cattle with the certainty of their living to maturity and to an age to justify a profit on their raising. Our county is being filled up with better breeds of cattle, none of which have died; this could not be done before 1907, the beginning of our work. Money would be of no inducement to us to go back to conditions in 1906. It has been more to Bradley County than any other blessing that has come to us in the last 50 years.

From Dr. John Roberts, health officer of Roane County, Kingston, Tenn., May 6, 1912: The people of Roane County are all highly pleased at the results obtained from eradicating the fever tick from their county. We were three years below the line and the cattle business was at a standstill, but we spent two years in a successful campaign against the tick and are now released from quarantine. The cattle business is good in the county and everybody is pleased.

From Messrs. J. C. Crocker, chairman, and J. A. Gibson, clerk, of the county court of Coffee County, Manchester, Tenn., April 22, 1912: While we have not heard much said in regard to the eradication of the Texas-fever tick for some time, yet we feel safe in saying that we are sure that the price of cattle has advanced at least 25 per cent since the quarantine was raised, thereby increasing interest in cattle raising and also otherwise improving farming methods. The people of this county would not be under the quarantine for any amount of money. We recommend that all farmers now living in quarantine territory take hold and assist in every way possible to eradicate the fever tick.

From the board of health of Sequatchie County, Tenn., May 7, 1912: We the undersigned, county board of health of this county, desire to make the following statement in regard to tick eradication in our county: We began this work five years ago this spring and thoroughly worked at it for three years and have succeeded in exterminating the ticks. This work did not take well at the start with a considerable number of our people; in fact, some indignation meetings, with large crowds, were called together to condemn and to hinder the work, but we kept the work going under the instructions and assistance of your office.

This is a good cattle-raising section, and the farmers are more interested in this business than ever. We have been acquainted with the stock-raising business in this county for 40 years, and can truthfully state that good, nice, fat cattle off the range six years ago sold for 2 cents per pound, and from 2 cents to 2½ was the best price ever received before the work of tick eradication. Since then our stock have increased in value every year, and for the last two or three years our people have sold the same grade of cattle off the range for 4 cents per pound, and no trouble to find buyers.

Our farmers are highly pleased over the conditions which now exist, and it has put new life into the cattle business here.

(Signed)

J. A. LAMB, *Chairman.*

JOE MINTON, *Secretary.*

J. H. HEARD, *Judge.*

From Mr. W. R. Burton, chairman of the county court of Moore County, Lynchburg, Tenn., April 20, 1912: We are very grateful, indeed, for what has been done for us in the way of eradicating the tick, and can not find words in which to express the appreciation of the good people of our county. I hope that every State in the Union will be free from the tick as we are. It gives me great pleasure to contribute anything that would be of any benefit in eradicating the tick.

Any reader who may desire verification of the foregoing statements as to the advantages of tick eradication may feel free to write to any person whose name has been given in this bulletin, as permission has been granted in each case to use the statement for publication.



